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Use of 3D Printing for Custom Wind Tunnel Fabrication PAUL GAGORIK, ZACHARY BATES, EMIN ISSAKHANIAN, Loyola Marymount University — Small-scale wind tunnels for the most part are fairly simple to produce with standard building equipment. However, the intricate bell housing and inlet shape of an Eiffel type wind tunnel, as well as the transition from diffuser to fan in a rectangular tunnel can present design and construction obstacles. With the help of 3D printing, these shapes can be custom designed in CAD models and printed in the lab at very low cost. The undergraduate team at Loyola Marymount University has built a custom benchtop tunnel for gas turbine film cooling experiments. 3D printing is combined with conventional construction methods to build the tunnel. 3D printing is also used to build the custom tunnel floor and interchangeable experimental pieces for various experimental shapes. This simple and low-cost tunnel is a custom solution for specific engineering experiments for gas turbine technology research.

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